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The Effect of Pelleting Rations Containing Different Levels of Dehydrated Alfalfa Meal Fed to Growing-Finishing Swine

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THE EFFECT OF PELLETING RATIONS CONTAINING DIFFERENT LEVELS OF DEHYDRATED ALFALFA MEAL FED TO GROWING-FINISHING SWINE[1]/

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Some disagreement exists as to the best method of feeding swine. Experimental data indicates that, in general, pigs gain slightly faster on complete mixed rations but often the most economical gains are obtained by free-choice feeding. An increased use of pelleted feeds has occurred during the past few years. Pelleting has been shown to be of most benefit in rations that contain feeds high in fiber such as oats, barley or alfalfa.

The following experiment was set up in order to compare the performance of pigs fed meal and pelleted rations containing different levels (0, 2.5, 5.0 and 10.0%) of dehydrated alfalfa meal.

Experimental Plan

Ninety-six pigs, 8 to 9 weeks of age, were assigned to 16 lots of 6 pigs each on the basis of litter, weight, and sex. Eight of the lots received the meal ration and 8 lots the pelleted ration. Two lots received each of the dehydrated alfalfa levels in each ration form.

The pigs were housed in concrete pens with connecting outside lots. The composition of the rations used is shown in table 1. These rations were formulated on an equal protein basis.

Table 1. Composition of Rations for Alfalfa Level - Pelleting Experiment (Percent)

	A	B	C	D
	To 110 lbs.			
Ground yellow corn	80.3	78.4	76.4	72.3
Soybean oil meal	13.5	13.05	12.75	12.15
Tankage	4.5	4.35	4.25	4.05
Dehydrated alfalfa meal (17%)	---	2.5	5.0	10.0
Di-calcium phosphate	0.7	0.8	0.8	0.8
Limestone	0.3	0.2	0.1	---
Trace mineral salt	0.5	0.5	0.5	0.5
Vitamin supplement[a/]	0.15	0.15	0.15	0.15
Antibiotic supplement[b/]	0.05	0.05	0.05	0.05
	110-200 lbs.			
Ground yellow corn	89.7	87.7	85.9	82.0
Soybean oil meal	6.0	5.7	5.25	4.5
Tankage	2.0	1.9	1.75	1.5
Dehydrated alfalfa meal	---	2.5	5.0	10.0
Di-calcium phosphate	1.0	1.0	1.0	1.0
Limestone	0.6	0.5	0.4	0.2
Trace mineral salt	0.5	0.5	0.5	0.5
Vitamin supplement[a/]	0.15	0.15	0.15	0.15
Antibiotic supplement[b/]	0.05	0.05	0.05	0.05

a/ Furnished 1 mg. riboflavin, 2 mg. pantothenic acid, 4.5 mg. niacin, 5 mg. choline, 5 mcg. vitamin B_{12}, 1134 units vitamin A and 142 units vitamin D per pound of ratio

b/ Furnished 15 mg. of aureomycin per pound of ration.

1/ Presented at South Dakota State College Swine Field Day, August 28, 1959.

Summary of Results

The results of this experiment for the period from May 7, 1959 to August 18, 1959 are shown in table 2.

Table 2. Summary of Performance of Pigs Fed Meal or Pelleted Rations Containing Different Levels of Alfalfa Meal[a/]

	Av. days on test	Av. wt. Aug. 18	Av. da. gain to 110 lbs.	Av. da. gain to Aug. 18	Av. da. feed to 110 lbs.	Feed per 100 lbs. gain to 110 lbs.
Meal Ration						
0 alfalfa	98	191.8	1.46	1.58	3.95	270
2.5% alfalfa[b/]	98	196.4	1.44	1.60	4.08	285
5% alfalfa	98	197.7	1.49	1.64	4.28	287
10% alfalfa	100	187.0	1.40	1.50	3.68	264
Pelleted Ration						
0 alfalfa	96	196.2	1.48	1.65	3.87	263
2.5% alfalfa	96	200.0	1.61	1.70	4.25	263
5% alfalfa	93	200.0	1.58	1.75	4.16	263
10% alfalfa	100	190.5	1.37	1.54	3.94	288

a/ Total of 12 pigs (2 lots of 6 pigs each) on each treatment. Average initial weight approximately 37 pounds.
b/ One pig died in replicate II, data are for 11 pigs.

Pigs fed the rations in meal form varied only slightly in rate of gain except for the lots fed the 10 percent alfalfa ration. These pigs gained at a slower rate both during the period up to 110 pounds and for the entire period. Somewhat faster gains were obtained when the pelleted rations were fed. For the entire period only the lot receiving the 10 percent alfalfa level in pelleted form gained less than the pigs receiving any of the meal rations. Fastest gains were made by pigs fed 5 and 2.5 percent alfalfa rations in pelleted form.

Alfalfa levels of 2.5 and 5 percent increased feed consumption while pigs fed 10 percent alfalfa consumed less feed. Pelleting of the 10 percent alfalfa ration appeared to increase consumption of this ration.

Table 3 summarizes the results to approximately 110 pounds according to alfalfa levels and table 4 combines the lots for a comparison of meal and pelleted rations.

Pigs fed 2.5% alfalfa gained 4.1% faster but required 3.0% more feed than the pigs fed the basal ration A. The lots of pigs fed 5% alfalfa performed very similarly to those fed 2.5% alfalfa. When 10% of alfalfa was included in the ration there was a 6.1% reduction in rate of gain and a 3.8% increase in feed required per unit of gain. Feed costs per 100 pounds of gain increased as the level of alfalfa in the ration increased. The cost of each ration was nearly identical so the feed costs merely reflect the differences in feed required per unit of gain.

The pigs fed pelleted rations gained 3.4% faster on 2.9% less feed than the pigs fed rations in meal form. However, the cost of pelleting ($6.50 per ton) resulted in higher feed costs for the pigs fed the pelleted rations.

Table 3. Results of Feeding Different Levels of Dehydrated Alfalfa to Pigs up to Approximately 110 pounds

Ration	A	B	C	D
Level of Alfalfa	0	2.5%	5.0%	10%
No. of pigs	24	23	24	24
Av. initial wt., lb.	37.0	37.1	37.0	37.0
Av. final wt., lb.	113.4	116.4	116.7	108.9
Av. daily gain, lb.	1.47	1.53	1.54	1.38
Av. daily feed, lb.	3.91	4.16	4.22	3.81
Av. feed per 100 lb. gain, lb.	266	274	275	276
Feed cost per 100 lb. gain[a/]	$7.39	$7.60	$7.62	$7.70

a/ Feed costs per cwt.: corn, 2.00; soybean meal, 3.70; tankage, 5.30; alfalfa meal, 2.45; di-calcium phosphate, 4.90; limestone, 1.10; trace mineral salt, 2.25; vitamin supplement, 30.00; antibiotic supplement, 90.00; grinding and mixing, 0.13; pelleting, 0.325.

Table 4. Meal Ration and Pelleted Ration for Pigs to Approximately 110 Pounds

	Meal	Pelleted
No. of pigs	47	48
Av. initial wt., lb.	37.2	36.9
Av. final wt., lb.	112.3	115.3
Av. daily gain, lb.	1.45	1.51
Av. daily feed, lb.	3.99	4.06
Av. feed per 100 lb. gain, lb.	277	269
Feed cost per 100 lb. gain[a/]	$7.26	$7.91

a/ See feed prices listed in footnote of table 3.